



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Application of:

Group Art Unit: 1775

Applicant: Matthias Oechsner

Examiner: McNeil, Jennifer C.

Serial No.: 10/087,716

Atty. Dkt.: 01P05135US01

Filed: March 1, 2002

Title: THERMAL BARRIER COATING HAVING SUBSURFACE
INCLUSIONS FOR IMPROVED THERMAL SHOCK RESISTANCE

Commissioner for Patents
P.O. Box 1450
Washington, DC 20231-1450

DECLARATION OF RAMESH SUBRAMANIAN
UNDER 37 CFR 1.132

1. I, Ramesh Subramanian, a citizen of India, hereby declare and state as follows:

2. I have been continuously employed by Siemens Westinghouse Power Corporation and its predecessor, Westinghouse Electric Corporation, for approximately the past seven years. I am currently Coating Group Leader in the Materials Department, and I work in the field of high temperature ceramic materials.

3. Prior to my employment by Westinghouse Electric Corporation, I was employed by the Department of Energy at the Oak Ridge National Laboratory for approximately two and one-half years, working in the field of high temperature materials.

4. I received a doctorate degree (PhD) in Materials Science from Cornell University in 1995. My combined academic and commercial experience in the field of materials science totals approximately sixteen years.

5. I understand that the USPTO Examiner has rejected certain claims in the above-cited application on the basis that the invention of those claims is anticipated by the teaching of Seals (US patent 6,071,628). I understand that the Examiner's position is that prior art products produced in accordance with the

Seals patent will necessarily or inherently possess microcracks that extend from hollow particles to the free surface because the ceramic layer is deposited in a conventional manner and comprises a zirconia ceramic with silica.

6. On information and belief, I disagree with the Examiner's position that the thermal barrier coating 7 of Seals will have voids that extend between an embedded hollow particle and the surface of the ceramic coating. The microcracks that are described by Seals are known to exist in ceramic materials deposited by a thermal process due to stresses caused during the cooling of the material. Such microcracks will form whether or not there are embedded hollow structures. Such microcracks are known to be randomly oriented and would not necessarily or inherently extend from embedded hollow structures to the free surface. The attached photomicrograph illustrates hollow structures embedded in a zirconia microstructure, and it illustrates the random orientation of the microcracks. Accordingly, it is my opinion that it is not necessary or inherent that the ceramic coating of Seals will have cracks that extend between the embedded hollow particles and the surface of the coating.

7. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or of any patent issuing there from.

Dated: Nov 22, 2004

By: _____



Ramesh Subramanian

Microcracks are randomly
Oriented. No cracks are inherently
Formed to the top surface.

